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2017

## Nebraska Summary: S1149 Challenger 1046

Nebraska Tractor Test Laboratory

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# SUMMARY OF OECD TEST 3106 - NEBRASKA SUMMARY 1149

## CHALLENGER 1046 DIESEL

### CONTINUOUSLY VARIABLE TRANSMISSION

#### POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption Gal/hr (l/h)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1053 rpm)						
443.0 (330.3)	1700	21.77 (82.40)	0.340 (0.207)	20.35 (4.01)	1.18 (4.46)	
Standard Power Take-off Speed (1000 rpm)						
446.0 (332.6)	1614	21.45 (81.20)	0.334 (0.203)	20.76 (4.09)	1.06 (4.00)	
Power at 1500 Engine RPM (1 hour)						
445.4 (332.1)	1500	21.39 (81.00)	0.333 (0.202)	20.81 (4.10)	1.44 (5.45)	

#### VARYING POWER AND FUEL CONSUMPTION

443.0 (330.3)	1700	21.77 (82.40)	0.340 (0.207)	20.35 (4.01)	1.18 (4.46)	Air temperature
386.1 (287.9)	1743	19.26 (72.90)	0.345 (0.210)	20.05 (3.95)	0.96 (3.65)	70°F (21°C)
292.0 (217.7)	1758	15.35 (58.10)	0.364 (0.221)	19.04 (3.75)	0.58 (2.18)	Relative humidity
196.3 (146.4)	1773	11.25 (42.60)	0.397 (0.241)	17.44 (3.43)	0.55 (2.08)	36%
99.1 (73.9)	1789	7.45 (28.20)	0.520 (0.316)	13.32 (2.62)	0.52 (1.97)	Barometer
--	1802	4.17 (15.80)	--	--	0.14 (0.53)	30.2" Hg (102.4 kPa)

Maximum torque - 1622 lb.-ft. (2199 Nm) at 1200 rpm

Maximum torque rise - 18.5%

Torque rise at 1400 engine rpm - 18%

Power increase at 1500 engine rpm - 0.5%

#### DRAWBAR PERFORMANCE UNBALLASTED - FRONT DRIVE ENGAGED FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	D.E.F. Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C)	Barom. inch Hg (kPa)
Power at Rated Engine Speed—Speed setting 9								
382.7 (285.4)	25685 (114.26)	5.59 (8.99)	1701	2.3	0.396 (0.241)	17.56 (3.46)	0.035 (0.021)	203 (95)
75% of Pull at Rated Engine Speed—Speed setting 9								
299.0 (223.0)	19270 (85.71)	5.82 (9.37)	1751	1.7	0.410 (0.249)	16.95 (3.34)	0.036 (0.022)	203 (95)
50% of Pull at Rated Engine Speed—Speed setting 9								
205.6 (153.3)	12855 (57.18)	6.00 (9.65)	1768	0.9	0.444 (0.270)	15.68 (3.09)	0.013 (0.008)	205 (96)
75% of Pull at Reduced Engine Speed—Speed setting - 11								
301.1 (224.5)	19290 (85.80)	5.85 (9.42)	1436	1.5	0.383 (0.233)	18.17 (3.58)	0.033 (0.020)	203 (95)
50% of Pull at Reduced Engine Speed—Speed setting - 11								
205.8 (153.5)	12910 (57.42)	5.98 (9.63)	1451	1.0	0.403 (0.245)	17.26 (3.40)	0.028 (0.017)	205 (96)

**Location of tests:** DLG e.V. Test Centre, Technology and Farm inputs, Max-Eyth-Weg 1, D-64823 Gross-Umstadt, Germany

**Dates of tests:** November, 2017

**Manufacturer:** AGCO GmbH Johann Georg Fendt Str 4 D 87616 Marktoberdorf Germany

**CONSUMABLE Fluids:** Fuel No. 2 Diesel Specific gravity converted to 60°/60°F (15°/15°C) 0.8314 Fuel weight 6.93 lbs/gal (0.830 kg/l) Diesel Exhaust Fluid (DEF) 32% aqueous urea solution DEF weight 9.071 lbs/gal (1.087 kg/l) Oil SAE 5W-30 API service classification CJ-4 Transmission and hydraulic lubricant MAN M3277 fluid Front axle lubricant MAN M3277 fluid

**ENGINE:** Make MAN Diesel Type six cylinder vertical with turbocharger, air to air intercooler and D.E.F. (diesel exhaust fluid) exhaust treatment Serial No. 52246840514658 Crankshaft lengthwise Rated engine speed 1700 Bore and stroke 4.960 x 6.535" (126.0 mm x 166.0 mm) Compression ratio 17.0 to 1 Displacement 758 cu in (12419 ml) Starting system 24 volt Lubrication pressure Air cleaner two paper elements and aspirator Oil filter one full flow cartridge Oil cooler engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil Fuel filter one paper element and prestrainer Fuel cooler radiator for pump return fuel Exhaust DOC (diesel oxidation catalyst)/DPF (diesel particulate filter) System and SCR (selective catalyst reduction) with a vertical muffler Cooling medium temperature control thermostat and variable speed fan

**CHASSIS:** Type front wheel assist with independent drive to each axle Serial No. 53023119 Tread width rear 74.8" (1900 mm) to 88.6" (2250 mm) front 79.9" (2030 mm) to 88.6" (2250 mm) Wheelbase 129.9" (3300 mm) Hydraulic control system direct engine drive Transmission CVT. A combination of mechanical and hydrostatic sections allow an infinite speed adjustment. Nominal travel speeds mph (km/h) forward: 0-37 (0-60), reverse: 0-21 (0-33) Clutch a foot pedal controls the hydrostatic oil flow Brakes wet multiple disc hydraulically operated by foot pedal Steering hydrostatic Power take-off 1000 rpm at 1614 engine rpm Unladen tractor mass 31615 lb (14340 kg)

## DRAWBAR PERFORMANCE

### UNBALLASTED - FRONT DRIVE ENGAGED - 1500 ENGINE RPM MAXIMUM POWER AT SELECTED TRAVEL SPEEDS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp. <sup>°</sup> F(°C) cool- ing med	Air drv bulb	Barom. inHg (kPa)
Speed setting 5										
273.8 (204.2)	34755 (154.59)	2.96 (4.76)	1758	8.8	0.452 (0.275)	15.48 (3.05)	0.030 (0.018)	205 (96)	63 (17)	29.3 (99.3)
Speed setting 6										
336.2 (250.7)	34620 (154.01)	3.64 (5.86)	1738	8.0	0.431 (0.262)	16.19 (3.19)	0.041 (0.025)	205 (96)	64 (18)	29.3 (99.3)
Speed setting 7.5										
368.2 (274.6)	34710 (154.40)	3.98 (6.40)	1498	6.5	0.406 (0.247)	17.21 (3.39)	0.038 (0.023)	201 (94)	64 (18)	29.3 (99.3)
Speed setting 9										
383.3 (285.8)	29405 (130.80)	4.89 (7.87)	1501	3.2	0.391 (0.238)	17.87 (3.52)	0.038 (0.023)	201 (94)	63 (17)	29.4 (99.4)
Speed setting 11										
388.0 (289.3)	24340 (108.26)	5.98 (9.62)	1500	2.2	0.387 (0.236)	18.05 (3.56)	0.036 (0.022)	201 (94)	59 (15)	29.3 (99.3)
Speed setting 13										
388.4 (289.6)	20490 (91.15)	7.11 (11.44)	1499	1.7	0.384 (0.234)	18.17 (3.58)	0.038 (0.023)	203 (95)	59 (15)	29.3 (99.3)
Speed setting 15										
387.7 (289.1)	17830 (79.30)	8.15 (13.13)	1501	1.6	0.386 (0.235)	18.11 (3.57)	0.038 (0.023)	203 (95)	59 (15)	29.3 (99.3)
Speed setting 17										
384.6 (286.8)	15480 (68.87)	9.32 (14.99)	1503	1.5	0.389 (0.236)	17.97 (3.54)	0.038 (0.023)	203 (95)	61 (16)	29.3 (99.3)
Speed setting 19										
383.3 (285.8)	13860 (61.65)	10.37 (16.69)	1500	1.4	0.391 (0.238)	17.87 (3.52)	0.043 (0.026)	201 (94)	59 (15)	29.3 (99.3)

**REPAIRS AND ADJUSTMENTS:** No repairs or adjustments.

**NOTE 1:** The data on this summary was obtained from OECD report 3106 conducted on the Fendt 1046 S4 Vario Diesel.

**NOTE 2:** The performance figures on this report are the result of replacing the electronic engine control module of the Fendt 1050 S4 Vario with the Fendt 1046 S4 Vario module.

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor fell 1.0% short of meeting the manufacturer's 3 point lift capacity claim of 18631 lb (8450 kg) at ball ends. The manufacturer's hydraulic pump flow claim of 113.5 GPM (430 l/min) with 2 pumps was not verified. The performance figures on this summary were taken from a test conducted under the OECD Code 2 test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **3106**, Nebraska Summary 1149, July 23, 2018.

Roger M. Hoy  
Director

M.F. Kocher  
P.J. Jasa  
J.D. Luck  
Board of Tractor Test Engineers

## TRACTOR SOUND LEVEL WITH CAB

	dB(A)
At no load at speed setting 4.7 mph (7.5 km/h)	68.1
Transport at speed setting 3.7 mph (6.0 km/h)	70.2
Bystander	--

Horizontal distances of drawbar hitch point behind rear wheel axis - 41.5 in (1053 mm), 47.4 in (1203 mm), 53.3 in (1353 mm)

## TIRES AND WEIGHT

Rear Tires - No., size, ply & psi(kPa)  
Front Tires - No., size, ply & psi(kPa)  
Height of Drawbar  
Static Weight with operator - Rear  
- Front  
- Total

### Tested Without Ballast

Two 900/65R46;\*\*\*;12(80)  
Two 710/60R38;\*\*\*;12(80)  
25.6 in (650 mm)  
17915 lb (8125 kg)  
13700 lb (6215 kg)  
31615 lb(14340 kg)

## HYDRAULIC PERFORMANCE

CATEGORY:3

Quick Attach: No, Walterscheid quick couplers

Maximum force exerted through whole range: 17085 lbs (76.0 kN) (at 24"(610 mm) behind hitch points)  
18455 lbs (82.1 kN) at ball ends

i) Sustained pressure at compensator cutoff: 2850 psi (197 bar)

three outlet sets combined

ii) Pump delivery rate at minimum pressure: 61.3 GPM (232.0 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 58.3 GPM (220.7 l/min)

Delivery pressure: 2540 psi (175 bar)

Power: 86.3 HP (64.3 kW)

single outlet set

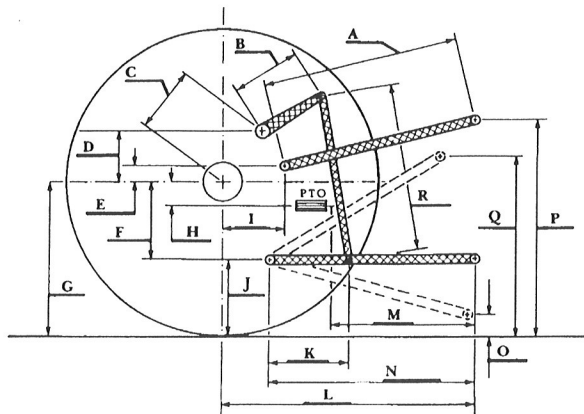
ii) Pump delivery rate at minimum pressure: 44.3 GPM (167.6 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 43.0 GPM (162.9 l/min)

Delivery pressure: 2320 psi (160 bar)

Power: 58.2 HP (43.5 kW)



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	35.0	890
B	15.5	393
C	18.6	473
D	15.7	398
E	3.5	90
F	16.9	430
G	44.3	1125
H	5.4	136
I	24.0	610
J	27.4	695
K	25.3	642
L	58.7	1490
M	30.8	782
N	43.3	1100
O	9.1	230
P	54.3	1380
Q	44.4	1127
R	41.4	1045

## RECOMMENDED CITATION FORMAT:

NTTL.(2018). OECD tractor test 3106 for Challenger 1046 Diesel.

Lincoln, NE:Nebraska Tractor Test Laboratory. Retrieved from <http://tractortestlab.unl.edu>